**Significant Figures**

1. **Review:**
2. The significant figures are underlined in the following examples

356 has 3 s.f. 3056 has 4 s.f. 0.356 has 3 s.f. 0.00356 has 3 s.f.

0.3560 has 4 s.f. 0.003506 has 4 s.f. 0.00035600 has 5 s.f. 3560 has 3 s.f.

3560. has 4 s.f. 3.56 x 103 has 3 s.f. 3.560 x 103 has 4 s.f.

1. Significant figures and calculations What is the precision of the final answer when you perform calculations? Note that your calculations should be completed in full without any rounding until the final answer.

**Multiplication and division**

Pick the number in the initial question with the least number of significant figures. The answer has the same number of significant figures as this number.

**Addition and subtraction**

Pick the number with the least number of decimal places. The answer has the same number of decimal places as this number.

1. **Practice questions**
2. The number of significant digits in 200.000 is
3. 1 b. 6 c. 4 d. 5

2. Specify the number of significant figures indicated in each of the following quantities or values.

(a) 307 metres (b) 26.98 kilojoules (c) 1.5200 (d) 0.001305

(e) 2750 kilograms (f) 20.060 litres (g) 2,892,000

3. A grain of sand is weighed and found to have a mass of 650 mg. Write this mass in scientific notation to

(a) two significant figures

(b) three significant figures

(c) four significant figures

4. Round the following to **one** decimal place.

(a) 21.92 (b) 0.871 (c) 16.05 (d) 16.051 (e) 9.0009 (f) 100.99

5. Perform the following calculations and give the answers in **scientific notation** to the correct number of significant figures:

(a) 5064 x 13 (b) 405.0 x 4.0 (c) 6.02 x 5.1 ÷ 0.00034

(d) 9.54 – 3.2 + 12.007 (e) 4.35 ÷ 9.1+1.7 (f) 12.8 + 9.08 x 7.1

Solutions:

1. b

2. 3 , 4 , 5 , 4 , 3 , 5 , 4

3. 6.5 x10^2 6.50 x10^2 6.500 x10^2

4. 21.9 , 0.9 , 16.1 , 16.1 , 9.0 , 101.0

5. 6.6 x10^4 , 1.6 x10^3, 9.0 x10^4, 1.83 x10^1, 2.2 x10^0, 7.7 x10^1